**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**
**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re application of

Koichi HAGIWARA, et al.

Appln. No.: 10/006,568

Confirmation No.: 3469

Filed: December 10, 2001

For: CLEANING AND RELEASING DEVICE

Docket No: Q67594

Group Art Unit: 3752

Examiner: Christopher S. Kim

**APPEAL BRIEF UNDER 37 C.F.R. § 41.37**

**MAIL STOP APPEAL BRIEF - PATENTS**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellant submits the following:

**Table of Contents**

## I. REAL PARTY IN INTEREST

The real party in interest is the Assignee, Shibuya Kogyo Co., Ltd., by virtue of an assignment recorded in the USPTO on December 10, 2001 at Reel 012368, Frame 0350.

## II. RELATED APPEALS AND INTERFERENCES

There are no other prior or pending appeals or interferences known to the Appellants which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

## III. STATUS OF CLAIMS

Claims 1, 3-7, 14 and 15 are pending in the application.

Claims 2 and 8-13 have been canceled without prejudice or disclaimer, and are not the subject of this appeal. Additionally, claim 5 has been withdrawn, and is not the subject of this appeal.

Claims 1, 3, 4, 6, 7, 14 and 15 are pending and are the subject of this appeal.

## IV. STATUS OF AMENDMENTS

Applicants filed an Amendment under 37 C.F.R. § 1.116 on August 22, 2006 in response to the Office Action dated May 23, 2006. On September 22, 2006, Applicants filed a Request for Continued Examination (RCE) to request entry of the August 22 Amendment. Subsequently, the Examiner issued a Restriction Requirement dated October 18, 2006. In response, Applicants elected Group I, including claims 1, 3, 4, 6, 7, 14 and 15. This left claim 5 as a non-elected claim. No further claim amendments have been filed by the Applicants. Accordingly, the claims stand as presented in the August 22 Amendment, except that claim 5 is now withdrawn.

## V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention relates to a cleaning and releasing device which sprays a gas-liquid mixed flow including a powder and granular material onto an object to be cleaned.[1] The device includes an injection nozzle which receives, mixes and injects both pressurized liquid and pressurized gas. Pressurized gas is supplied to the injection nozzle based upon a detection of the flow of pressurized liquid to the nozzle. The supply of powder and granular material to the nozzle may also be based upon the detection of the pressurized liquid.

As shown in Fig. 1, an embodiment of the invention includes an injection nozzle 2 which receives a pressurized gas via a pressurized gas supply passage 4 and a pressurized liquid via pressurized liquid supply passage 27. An injection portion 8 provides a powder and granular material and is connected to the middle of the supply passage 4. The device includes a switching valve 5 for shutting off a supply of the pressurized gas and a pinch valve 9 for shutting of the powder and granular material supply, each of which are disposed on the supply passage 4. Furthermore, a hand valve 19 is provided in the vicinity of the injection nozzle to operate the supply of the pressurized liquid and a sensor 20 detects the flow of the pressurized liquid. The switching valve 5, pinch valve 9 and a driving motor 11 for feeding the powder and granular material are controlled by a controller 13, which receives a signal from the sensor 20 as to whether the flow of the pressurized liquid is detected.[2]

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[1] *See* paragraph [0001] of the specification.

[2] *See* paragraphs [0009] and [0010].

Fig. 2 describes the operation of the device. When the sensor 20 detects the pressurized flow of liquid, the switching valve 5 and pinch valve 9 are opened S02. The driving motor 11 is also activated S03.[3] This starts the supply of the pressurized gas and powder and granular material, so that when the pressurized liquid is detected, the pressurized gas and the powder and granular material are also fed to the injection nozzle 2. Thus, a liquid-gas flow can be mixed and injected at the injection nozzle. Then, when the sensor detects that the pressurized liquid flow has stopped S04, the driving motor stops S05 and the switching valve 5 and pinch valve 9 are eventually closed S07.[4] Accordingly, once the flow of pressurized liquid is stopped, the flow of pressurized gas and granular and powder material is then stopped.

Specifically, there is provided according to claim 1, with reference to Figs. 1 and 2, an injection nozzle 2 which mixes and injects a pressurized liquid and a pressurized gas. (*See* page 15, lines 10-14). A pressurized liquid flow passage 17, 18 supplies the pressurized liquid to the injection nozzle 2. A pressurized gas flow passage 4, 10 for supplying the pressurized gas to the injection nozzle 2. Operating means 19 supply and stop the pressurized liquid, detecting means 20 detect supply and stop of the pressurized liquid and a switching valve 5 is provided in the flow passage of the pressurized gas and serves to supply and stop the pressurized gas to the injection nozzle 2. Controller 13 controls a switching operation of the switching valve 5 based on a detection signal transmitted from the detecting means. Pressurized gas is supplied to the injection nozzle from the pressurized gas supply passage when said sensor detects the supply of

[3] *See* paragraphs [0011] and [0012].

[4] *See* paragraph [0013].

the pressurized liquid from said liquid tank (S01 and S02). (*See* page 14, lines 13-21). Also, the controller closes said switching valve based on a detection signal transmitted from the detecting means so as to stop the supply of the pressurized gas to said injection nozzle when the stop of the injection of the pressurized liquid from said injection nozzle is detected by said detecting means (S04 and S07). (*See* page 15, line 20 to page 16, line 19).

There is provided according to claim 6, a liquid tank 15 for storing liquid, a pump 16 for pressurizing the liquid in said liquid tank to supply pressurized liquid, a liquid supply passage 27 for connecting said liquid tank 15 to said pump 16 and an injection nozzle 2 for injecting the pressurized liquid. A pressurized liquid flow passage 17, 18 connects said pump to said injection nozzle 2. A pressurized gas source 3 is also provided for supplying pressurized gas to the injection nozzle 2 through a pressurized gas supply passage 4, 10 and a switching valve 5 provided on said pressurized gas supply passage 4, 10. A sensor 20 is provided on said pressurized liquid flow passage 27, 17, 18 to detect supply and stop of the pressurized liquid from said liquid tank 15 and an operating portion 19 is disposed in said injection nozzle 2 or on said pressurized liquid flow passage 17, 18 to thereby supply and stop the pressurized liquid. Additionally, a controller 13 is connected to said sensor 20 and said pressurized gas supply passage 4, 10. The controller 13 detects supply and stop of the pressurized liquid detected by the sensor to thereby control supply and stop of the pressurized gas from said pressurized gas supply passage to said injection nozzle 2 based on a detection signal of said sensor 20 (S01, S02, S04, S07). (*See* page 14, lines 13-21). Pressurized gas is supplied to said injection nozzle 2 from said pressurized gas supply passage 4, 10 when said sensor 20 detects the supply of the pressurized liquid from said liquid tank 15 (S01, S01).

Claim 7 depends from claim 6. Claim 7 provides, with reference to Figs. 1 and 2, a powder and granular material tank 6 connected to said pressurized gas supply passage 4, 10. Supply and stop of powder and granular material is controlled by said controller 13 based on the supply and stop of the pressurized liquid detected by said sensor 20 (*see* signal sent from controller 13 to motor 11 to control the supply and stop of powder and granular material from the tank 6).

According to claim 15, with reference to Figs. 1 and 2, there is provided a liquid tank 15 for storing liquid, a pump 16 for pressurizing the liquid in said liquid tank to supply pressurized liquid, a liquid supply passage 27 for connecting said liquid tank 15 to said pump 16 and an injection nozzle 2 for injecting the pressurized liquid. A pressurized liquid flow passage 17, 18 connects said pump to said injection nozzle 2. A pressurized gas source 3 is also provided for supplying pressurized gas to the injection nozzle 2 through a pressurized gas supply passage 4, 10 and a switching valve 5 provided on said pressurized gas supply passage 4, 10. A sensor 20 is provided on said pressurized liquid flow passage 27, 17, 18 to detect supply and stop of the pressurized liquid from said liquid tank 15 and an operating portion 19 is disposed in said injection nozzle 2 or on said pressurized liquid flow passage 17, 18 to thereby supply and stop the pressurized liquid. Additionally, a controller 13 is connected to said sensor 20 and said pressurized gas supply passage 4, 10. The controller 13 detects supply and stop of the pressurized liquid detected by the sensor to thereby control supply and stop of the pressurized gas from said pressurized gas supply passage to said injection nozzle 2 based on a detection signal of said sensor 20 (S01, S02, S04, S07). Pressurized gas is supplied to said injection nozzle 2 from said pressurized gas supply passage 4, 10 when said sensor 20 detects the supply

of the pressurized liquid from said liquid tank 15 (S01, S01). (*See* page 14, lines 13-21). The controller 13 controls the supply and stop of powder and granular material by stopping and starting operation of a drive motor 11 connected to the powder and granular material tank 6. (*See* page 12, lines 3-9).

## VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

**Ground 1**

Claims 7 and 15 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Ground 2**

Claims 1, 3, 4, 6, 7 and 14 are rejected under 35 U.S.C. § 102(b) as being anticipated by Woodward (U.S. Patent No. 5,312,040).

## VII. ARGUMENT

**(Ground 1)** The Examiner rejected claims 7 and 15 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants respectfully traverse this rejection because claims 7 and 15 meet the requirements of 35 U.S.C. § 112, second paragraph, for definiteness. Furthermore, the Examiner has provided no reason, based on the requirements of 35 U.S.C. § 112 as to why these claims are allegedly indefinite.

35 U.S.C. § 112, second paragraph, requires that the claims (1) must set forth the subject matter which Applicants regard as their invention and (2) must particularly point out and distinctly claim the invention.[5] Claims 7 and 15 satisfy these requirements and the Examiner's rejection provides no assertions which address why the claims would not meet these requirements. While the Examiner cites the specification as teaching a specific embodiment with features which are allegedly not claimed in the invention, the Examiner fails to provide any explanation as to why he believes this somehow prevents claims 7 and 15 from meeting any of the requirements of 35 U.S.C. § 112, second paragraph. That is, there is no requirement that a claim include all the features disclosed in a particular embodiment.

Specifically, the Examiner asserts that claims 7 and 15 are indefinite because they recite the functional limitation "...and supply and stop of powder and granular material is controlled by

[5] MPEP §2171.

said controller based on the supply and stop of the pressurized liquid detected by said sensor."[6] The Examiner asserts that this phrase renders the claim indefinite by virtue of causing a structural gap because the claim does not also recite the driving motor 11 or feeding device 7 disclosed by the specification. Also, citing MPEP §2114, the Examiner states that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function.

Initially, in addition to the phrase above, claim 15 also recites that "the controller controls the supply and stop of powder and granular material by stopping and starting operation of a drive motor connected to the powder and granular material." That is, claim 15 does recite the "drive motor" which the Examiner asserts is necessary to eliminate the structural gap in the claim. Accordingly, even if the Examiner were correct that the failure to recite a drive motor would make the claim indefinite (and the Examiner's assertions in this regard are clearly incorrect), claim 15 would still be definite. In view of the above, it is not clear why the Examiner asserts that claim 15 is rejected under 35 U.S.C. § 112. Regardless, Applicants submit that claim 15 clearly satisfies the requirements 35 U.S.C. § 112, second paragraph.

Applicants also submit that claim 7 is definite as written. The Examiner has failed to sufficiently explain how there is anything indefinite about claim 7 or why it does not meet any of the actual requirements of 35 U.S.C. § 112. Claim 7 recites that the "supply and stop of powder and granular material is controlled by a controller". Thus, the claim merely recites that a controller provides control. This phrase clearly defines the subject mater which Applicants

[6] *See* section 5 on page 3 of the Office Action dated December 5, 2006.

regard as their invention. It certainly does not cause the claim to violate the requirements of 35 U.S.C. § 112, second paragraph, that the claims (1) must set forth the subject matter which Applicants regard as their invention and (2) must particularly point out and distinctly claim the invention.

The Examiner appears to assert that the supply cannot be controlled by a controller. However, it is unclear how the Examiner believes that the supply and stop cannot be ***controlled*** by a ***controller***. Indeed, it would be quite odd if a controller could not provide control. As the Examiner notes, a non-limiting embodiment of the specification teaches that the controller 13 may control the supply and stop of powder material through a driving motor 11. Yet this clearly is a teaching of the controller controlling the supply and stop of powder and granular material, as claimed. That is, the specification is consistent with the claimed invention.

There is no reason why claim 7 must recite a driving motor, nor does the Examiner provide any legal reason why a failure to particularly recite the driving motor renders the claim indefinite. The absence of the specific recitation of a driving motor in claim 7 does not make it unclear in any way.

Furthermore, the Examiner's citation and discussion of MPEP §2114 is totally irrelevant to the issue of whether the claim is definite. The question of whether a claim is distinguishable from prior art is simply not relevant to whether the claim satisfies the requirements of 35 U.S.C. § 112.

In view of the above, Applicants request that the rejection of claims 7 and 15 be withdrawn.

**(Ground 2)** The Examiner rejected claims 1, 3, 4, 6, 7 and 14 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,312,040 to Woodward (hereinafter "Woodward"). Applicants respectfully traverse this rejection at least because Woodward lacks a cleaning and releasing device which includes an injection nozzle which mixes and injects a pressurized liquid and a pressurized gas.

Claim 1 recites a cleaning and releasing device which includes an injection nozzle. The injection nozzle mixes and injects a pressurized liquid and a pressurized gas. The device includes a controller so that pressurized gas is supplied to the injection nozzle when pressurized liquid is supplied to the nozzle and the supply of pressurized gas is stopped when pressurized liquid is no longer fed to the nozzle. Thus, claim 1 clearly is directed to mixing and injecting the combination of both a pressurized liquid and a pressurized gas.

In contrast to the claimed invention, Woodward does not disclose a device which mixes a pressurized liquid and a pressurized gas. Instead, Woodward is directed to a device which supplies either a pressurized liquid to a nozzle 118 **or** a pressurized gas.

Woodward discloses a device which is designed to supply the combination of an abrasive 18 and a pressurized liquid 33 while not clogging the nozzle.[7] In order to avoid clogging the nozzle, 118 the Woodward device feeds compressed air to the nozzle when jetting of the pressurized liquid 33 and abrasive 18 is interrupted. The high pressure fluid stream 33 flows through either the nozzle 118 or the nozzle dump 120. As shown in Fig. 3, Woodward includes a supply of an abrasive 18 a gas source 61 and a fluid pump 36. The fluid pump 36 provides a

[7] *See* Abstract.

high pressure fluid stream 33 through a fluid conduit 32 to the nozzle 118. When the pressure actuator 34 senses a high pressure fluid stream in the fluid conduit 32, the valve 14 is opened to allow the abrasive 18 to flow through the passage way 62 to the nozzle 118. Accordingly, both the fluid from the fluid pump 36 and the abrasive 18 are fed to the nozzle 118.

Woodward also includes a trigger 102, 104. When the trigger 102, 104 is actuated, a dump inlet 114 is opened. When the dump inlet 114 is opened, the fluid stream 33 flows through the dump 120 instead of the nozzle 118. This causes the pressure at the pressure actuator 34 to drop and the valve 14 is moved to stop the supply of abrasive 18 and to instead allow the gas 61 to flow to through the passage 62 to the nozzle 118. Woodward teaches that this flow of gas keeps the abrasive material 18 from clogging the nozzle 118 when the liquid is not flowing through the nozzle 118. Accordingly, the Woodward device supplies the pressurized gas 61 to the nozzle 118 only in response to the pressurized liquid being diverted away from the nozzle 118 to the dump 120. Therefore, Woodward clearly does not teach a device as set forth in the claimed invention.

The structure of the Woodward device is such that when the fluid stream flows to the nozzle 118, the compressed gas does not flow to the nozzle 118. The Woodward structure allows for only one of a high pressure fluid stream or a compressed gas to flow through the nozzle 118. The Woodward device cannot be used as set forth in claim 1 because of its structure. Therefore, contrary to the Examiner's assertion, the Woodward device does not have a structure which meets the requirements of claim 1.

The Examiner provides two rationales as allegedly supporting the rejection. However, neither of these rationales provides a reason for maintaining the rejection. First, the Examiner

asserts that the recitation of an injection nozzle which mixes a pressurized liquid and a pressurized gas is functional language. The Examiner then asserts that the Woodward device is capable of performing the functional recitation when the pressure falls below 1,000 psi.[8]

Initially, claim 1 recites an injection nozzle which mixes and injects pressurized liquid and pressurized gas. Furthermore, claim 1 recites this nozzle in combination with a number of other features. These recitations require structural features which are not present in Woodward. Furthermore, "a functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used."[9]

As described above, Woodward clearly lacks a structure as set forth in the claimed invention. In Woodward the high pressure fluid stream 33 flows through either the nozzle 118 or the nozzle dump 120. The structure of the Woodward device is such that when the fluid stream flows to the nozzle 118, the compressed gas does not flow to the nozzle 118. The Woodward structure allows for only one of a high pressure fluid stream or a compressed gas to flow through the nozzle 118. Therefore, contrary to the Examiner's assertion, the Woodward device does not have a structure which meets the requirements of claim 1.

Nothing in Woodward discloses that the fluid stream 33 flows, or could flow, at the same time as compressed gas. In fact, Woodward consistently describes the fluid stream 33 as mixing with the abrasive material 18, and describes the compressed gas flowing when the fluid stream is

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[8] *See* section 7, "Response to Arguments", on page 4 of the Office Action dated December 5, 2006.

[9] *See* M.P.E.P. § 2173.05(g).

interrupted. For instance, the Abstract notes that "[t]he apparatus involves the use of a pressure actuator which opens and closes gates of a valve, permitting a compressed gas to enter the nozzle and remove all abrasive material from a nozzle *when jetting is interrupted*" (emphasis added). Column 7, lines 8-24, further explain this operation. As explained in column 7, when the high pressure fluid stream 33 flows through the nozzle dump, the pressure in the high pressure fluid conduit 32 greatly decreases. Woodward further explains that during this interrupted flow period, the pressure actuator 12 operates to open the valve inlet 22 to allow only compressed gas 60 to flow to the nozzle 118. Thus, the interrupted flow causes the pressure drop which allows the compressed gas to flow to the nozzle. This is consistent with Fig. 4, in which the gas flows through the nozzle 118, when the pressurized liquid 33 flows through the nozzle dump 120, as well as other portions of the specification that describe the gas as flowing when the high pressure fluid blasting operations are interrupted.[10] Contrary to the Examiner's assertion, Woodward never discloses the situation where both the compressed liquid and the compressed gas flow to the same nozzle 118 of the spray gun 38 so that they are mixed. Rather, they are always separated.

The Examiner asserts that according to the flow chart of Fig. 5, pressurized liquid and pressurized gas would mix when the fluid pressure is less than 1,000 psi and the water jetting operation is not interrupted. However, this is not a possibility in Woodward. In Woodward, the fluid pressure drops when the jetting operation is interrupted, the fluid is diverted from the

[10] *See* column 3, lines 13-17; column 3, line 67 to column 4, line 2; and column 7, lines 54-61.

nozzle 118 and fed to the dump 120. Dumping the fluid causes the pressure drop, which in turn causes pressurized gas to flow to the nozzle. Therefore, when the pressure drops below 1,000 psi, the nozzle does not mix a pressurized fluid and a pressurized gas. Instead, the pressure dump is a consequence of the liquid being diverted from the nozzle 118 to the nozzle dump 120. Even under these circumstances, Woodward does not teach a device which mixes a pressurized fluid and a pressurized gas.

Finally, the claimed injection nozzle cannot be considered alone, but must be considered in combination with the other features set forth in the claim. The claimed invention is directed to a cleaning and releasing device, of which one element is an injection nozzle. In rejecting the claimed invention, the Examiner considers the combination of several elements of the Woodward device, not merely the nozzle alone. Accordingly, for the sake of argument alone, even if it were somehow possible to force both pressurized liquid and pressurized gas through the Woodward nozzle 118, Woodward does not teach such a combination. For example, the Examiner relies on Woodward as allegedly teaching a pressurized liquid flow passage, a pressurized gas flow passage, operating means, etc., in combination with a nozzle 38. When using the alleged flow passages, operating means, etc., disclosed by Woodward, which the Examiner relies upon for the rejection, the nozzle 38 does not mix pressurized liquid and pressurized gas.

As an alternative rationale for maintaining the rejection, the Examiner asserts that Woodward discloses spraying a mixture at column 7, lines 19-24 ("...compressed gas and some residual moisture from the diverted high pressure fluid stream 33 will be present in the barrel

116...). However, this does not constitute the disclosure of an injection nozzle which mixes and injects a pressurized liquid and a pressurized gas. The residual moisture is liquid left over after the pressurized liquid is diverted away from the nozzle 118. Accordingly, whatever residual moisture remains is not a pressurized liquid. Therefore, even if, for the sake of argument alone, this could be mixing of a liquid and gas, it would not be the mixing of a pressurized liquid and a pressurized gas, as claimed.

Claim 1 is also allowable over Woodward because Woodward fails to teach detecting the supply and stop of the pressurized liquid as set forth in claim 1. The Examiner asserts that because Woodward detects pressure, and that pressure fluctuation is inherent in stopping and starting the liquid in the line, Woodward therefore detects the supply and stop of pressurized liquid. However, controlling the flow of gas based upon pressure of a fluid in a line, as done in Woodward, is not the same as controlling the flow of gas based upon the stopping and starting of liquid in the line, as claimed.

Woodward discloses detecting a change in pressure such that it can detect the difference between when pressurized fluid flows through the nozzle 118 and when it flows through the nozzle dump 120. However, in either instance fluid still flows, although it does so at different pressures. Woodward merely detects the difference between the high pressure and the low pressure flow. If, for instance, the flow changed from the low pressure flow to stopping, Woodward cannot detect the change. Therefore, even though Woodward detects pressure, it does not detect the supply and stop of a liquid.

In view of the above, Applicants submit that claim 1 is allowable over Woodward.

In view of the above explanation of Woodward, Applicants also submit that claim 6 is allowable. Particularly, claim 6 is allowable at least because it recites that pressurized gas is supplied to said injection nozzle from said pressurized gas supply passage when said sensor detects the supply of the pressurized liquid from said liquid tank. As explained above, Woodward supplies pressurized gas when the supply of pressurized liquid is not detected, not when the flow of pressurized liquid is detected. Therefore, it is the opposite of claim 6. Accordingly, claim 6 is allowable over Woodward.

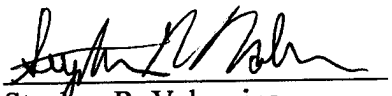
Claims 3 and 4 depend from claim 1 and claims 7 and 14 depend from claim 6. Claims 3, 4, 7 and 14 are allowable at least by virtue of their respective dependencies.

**Conclusion**

Unless a check is submitted herewith for the fee required under 37 C.F.R. §41.37(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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WASHINGTON DC SUGHRUE - 265550
65565
CUSTOMER NUMBER

Date: May 4, 2007

## CLAIMS APPENDIX

CLAIMS 1, 3, 4, 6, 7, 14 AND 15 ON APPEAL:

1. A cleaning and releasing device for spraying a jet flow onto an object to be cleaned, comprising:

an injection nozzle which mixes a pressurized liquid and a pressurized gas in said injection nozzle and injects the pressurized liquid and the pressurized gas;

a pressurized liquid flow passage for supplying the pressurized liquid to said injection nozzle;

a pressurized gas flow passage for supplying the pressurized gas to said injection nozzle;

operating means for supplying and stopping the pressurized liquid to said injection nozzle, said operating means being provided in said injection nozzle or on the flow passage of the pressurized liquid in communication with said injection nozzle;

detecting means for detecting supply and stop of the pressurized liquid generated by an operation of said operating means, said detecting means being provided in a position on said pressurized liquid flow passage;

a switching valve provided in the flow passage of the pressurized gas and serving to supply and stop the pressurized gas to said injection nozzle; and

a controller for controlling a switching operation of said switching valve based on a detection signal transmitted from the detecting means;

wherein the controller opens said switching valve based on a detection signal transmitted from the detecting means so as to supply the pressurized gas to said injection nozzle when the injection of the pressurized liquid from said injection nozzle is detected by said detecting means; and

wherein the controller closes said switching valve based on a detection signal transmitted from the detecting means so as to stop the supply of the pressurized gas to said injection nozzle when the stop of the injection of the pressurized liquid from said injection nozzle is detected by said detecting means.

3. A cleaning and releasing device according to claim 1, further comprising powder and granular supply means being provided on a flow passage of the pressurized gas, and supply and stop of the powder and granular material is controlled based on a result of the detection related to the supply and stop of the pressurized liquid to said injection nozzle.

4. A cleaning and releasing device according to claim 3, wherein the supply of the pressurized gas is started and the supply of the powder and granular material is started based on the detection of the supply of the pressurized liquid to said injection nozzle when injection is to be started, the supply of the powder and granular material is stopped and the supply of the pressurized gas is stopped after a predetermined time passes based on the detection of the stop of the pressurized liquid to said injection nozzle when the injection is to be stopped.

6. A cleaning and releasing device comprising:

a liquid tank for storing liquid;

a pump for pressurizing the liquid in said liquid tank to supply pressurized liquid;

a liquid supply passage for connecting said liquid tank to said pump;

an injection nozzle for injecting the pressurized liquid;

a pressurized liquid flow passage for connecting said pump to said injection nozzle;

a pressurized gas source;

a pressurized gas supply passage for connecting said pressurized gas source to said injection nozzle;

a switching valve provided on said pressurized gas supply passage;

a sensor provided on said pressurized liquid flow passage to detect supply and stop of the pressurized liquid from said liquid tank;

an operating portion disposed in said injection nozzle or on said pressurized liquid flow passage to thereby supply and stop the pressurized liquid; and

a controller connected to said sensor and said pressurized gas supply passage, said controller detecting supply and stop of the pressurized liquid detected by said sensor to thereby control supply and stop of the pressurized gas from said pressurized gas supply passage to said injection nozzle based on a detection signal of said sensor;

wherein pressurized gas is supplied to said injection nozzle from said pressurized gas supply passage when said sensor detects the supply of the pressurized liquid from said liquid tank.

7. A cleaning and releasing device according to claim 6, further comprising a powder and granular material tank connected to said pressurized gas supply passage, and supply and stop of powder and granular material is controlled by said controller based on the supply and stop of the pressurized liquid detected by said sensor.

14. A cleaning and releasing device according to claim 6, wherein the controller controls the supply and stop of the pressurized gas by opening and closing the switching valve on the pressurized gas supply passage.

15. A cleaning and releasing device comprising:

a liquid tank for storing liquid;

a pump for pressurizing the liquid in said liquid tank to supply pressurized liquid;

a liquid supply passage for connecting said liquid tank to said pump;

an injection nozzle for injecting the pressurized liquid;

a pressurized liquid flow passage for connecting said pump to said injection nozzle;

a pressurized gas source;

a pressurized gas supply passage for connecting said pressurized gas source to said injection nozzle;

a switching valve provided on said pressurized gas supply passage;

a sensor provided on said pressurized liquid flow passage to detect supply and stop of the pressurized liquid from said liquid tank;

an operating portion disposed in said injection nozzle or on said pressurized liquid flow passage to thereby supply and stop the pressurized liquid; and

a controller connected to said sensor and said pressurized gas supply passage, said controller detecting supply and stop of the pressurized liquid detected by said sensor to thereby control supply and stop of the pressurized gas from said pressurized gas supply passage to said injection nozzle based on said sensor;

wherein pressurized gas is supplied to said injection nozzle from said pressurized gas supply passage when said sensor detects the supply of the pressurized liquid from said liquid tank;

said device further comprising a powder and granular material tank connected to said pressurized gas supply passage, and supply and stop of powder and granular material is controlled by said controller based on the supply and stop of the pressurized liquid detected by said sensor; and

wherein the controller controls the supply and stop of powder and granular material by stopping and starting operation of a drive motor connected to the powder and granular material tank.

## EVIDENCE APPENDIX:

**None**

## RELATED PROCEEDINGS APPENDIX

None

PATENT APPLICATION

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**
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Docket No: Q67594

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Group Art Unit: 3752

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Examiner: Christopher S. Kim

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For: CLEANING AND RELEASING DEVICE

**SUBMISSION OF APPEAL BRIEF**

**MAIL STOP APPEAL BRIEF - PATENTS**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith please find an Appeal Brief. The statutory fee of $500.00 is being charged to Deposit Account No. 19-4880 via EFS Payment Screen. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,

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